Cabarrus County Hazard Mitigation Plan

I. Purpose

This plan defines the actions and techniques necessary to reduce the vulnerability of people and property of Cabarrus County to natural and man-made hazards.

II. Situation and Assumptions

- A. Natural hazards are features of the earth's natural systems. These hazards, such as severe weather, flooding, and geological disturbances, are generally not predictable and the results can damage the earth's environment. Despite this, the environment recovers from these episodes, but at its own pace.
- B. Our man-made or "built" environment, however, is not as resilient. Natural disasters occur when human activity in the form of buildings, infrastructure, agriculture and other land uses are located in the path of the destructive forces of nature. The man-made environment is more susceptible to natural hazards and cannot recuperate in the same manner as the natural environment. Communities that bear the brunt of a natural hazard often recover only over a long period of time and at great social and economic cost.
- C. In recent years, the frequency and impact of natural disasters has increased not because natural hazards occur more frequently but because more people are choosing to live and work in locations that put them and their property at risk. Additionally, businesses utilizing hazardous substances are becoming more common and are in closer proximity to residential areas than in the past.
- D. While natural hazards cannot be prevented, local communities can use various means to reduce the vulnerability of people and property to damage. Communities can reduce exposure to future natural hazards by managing the location and characteristics of both the existing and future built environment. By utilizing location and construction techniques, a community can mitigate negative impacts and reduce future damage to both human lives and property.
- E. Preparing for natural hazards involves establishing a comprehensive emergency management system consisting of the following four component strategies:
 - 1. Preparedness strategies are those undertaken to improve a community's ability to respond immediately after a disaster. Preparedness strategies include the development of response procedures, design and installation of warning systems, exercises to test emergency operational procedures, and training of emergency services personnel.
 - 2. Response strategies designed to meet the urgent needs of disaster victims. Response strategies occur during the disaster and include rescue operations, evacuation, emergency medical care, and shelter programs.
 - 3. Recovery strategies designed to rebuild after a disaster. These strategies include repairs to damaged public facilities such as roads and bridges, restoration of public

services such as power and water, and other strategies that help restore normal services to a community.

- 4. Hazard mitigation strategies designed to reduce or eliminate damages from future hazardous events. These strategies can occur before, during, and after a disaster and overlap all phases of emergency management.
- F. The Federal Emergency Management Agency defines hazard mitigation as "any action taken to eliminate or reduce the long-term risk to human life and property from natural and technological hazards." Mitigation strategies are ongoing and overlap all phases of emergency management. Hazard mitigation includes three types of strategies:
 - 1. Structural mitigation constructing dam and levee projects to protect against flooding, constructing disaster-resistant structures, and retrofitting existing structures to withstand future hazardous events.
 - 2. Non-structural mitigation development of land use plans, zoning ordinances, subdivision regulations, and tax incentives and disincentives to discourage development in high-hazard risk areas.
 - 3. Educational programs educating the public about potential natural hazards, the importance of mitigation, and how to prepare to withstand a disaster.

Any money invested in mitigation strategies will reduce the future demands for funds needed for recovery, repair and reconstruction after an emergency situation. Mitigation efforts also include the conservation of natural and ecologically sensitive areas (such as wetlands and floodplains) which enables the environment to absorb some of the impact of natural hazard events. In this manner, mitigation programs help the county and its communities attain a level of sustainability, which protects the long-term economic and environmental health of the entire county.

- G. The concept of sustainable development has emerged in recent years as a means to emphasize the need to regain a balance between the man-made and natural environment. Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Sustainable development centers on the type of development rather than quantity and is not intended to be a no-growth or slow-growth initiative. A community that has employed mitigation techniques as part of its sustainable development planning makes itself more resistant to natural disasters and their impacts.
- H. The devastating impact of Hurricane Floyd in the eastern part of the state brought the issue of hazard mitigation planning, or the lack of it, to the attention of state and local governments. While the effects of Hurricane Floyd brought the need for hazard mitigation into sharp focus for the citizens of North Carolina, it was Hurricane Hugo that had the most impact on Cabarrus County in the recent past. While relatively unaffected by Hurricane Floyd, Cabarrus County has been subject to other natural hazards that could be equally as severe. The effects of the damage resulting from Hurricane Floyd in the eastern part of the state mirror those that could occur in Cabarrus County in the wake of a natural disaster.

Businesses of all types, schools, and government were disrupted or destroyed. Farmers lost crops and livestock, plus damage to structures and equipment. The loss of homes, jobs, and the stress of the response and recovery efforts were severe social and psychological impacts on the people of the region.

- I. The Federal Government, through the Federal Emergency Management Agency (FEMA) has long recognized the need for comprehensive hazard mitigation. The hazard mitigation plan required under Section 409 of Stafford Disaster Relief and Emergency Assistance Act is typically developed in a post-disaster situation; however, the plan developed after a disaster is essentially a pre-disaster plan for the next emergency. Hazard mitigation is the only phase of emergency management that can break the cycle of damage, reconstruction, and repeated damage.
- J. In addition to the Stafford Act, there have been two Executive Orders dealing with flood losses. Executive Order 11988 is used by FEMA to deny disaster assistance in a repetitively flooded area. Instead, technical and financial resources of existing programs are used to help residents with relocation expenses and to prevent reoccupation of residential properties. The effect of this order is to mitigate future flood damages by encouraging residents to relocate.
- K. Federal and state hazard mitigation officers limit federal and state investments in floodplains through Executive Order 11990. This order restricts the availability of Federal Housing Administration (FHA), and Veterans Housing Administration (VHA) low-interest loans to homebuyers, the availability of Small Business Administration loans for future development, and Department of Housing and Urban Development Community Development Block Grant funds. The effect is to reduce the financial incentive that encourages development in an identified flood hazard area.
- L. In June, 2001 the North Carolina General Assembly passed Senate Bill 300, An Act to Amend Laws Regarding Emergency Management. This bill requires all local governments to have a hazard mitigation plan, approved by the North Carolina Emergency Management Department, in effect by November 1, 2004. Failure to comply will result in the loss of state public assistance funds in the event of an emergency situation.
- M. Cabarrus County has created a hazard mitigation plan to meet the requirements of Senate Bill 300 and provide a more secure environment for the citizens of the county.
- N. Planning is the key to making mitigation a proactive process and to ensuring that land subject to hazards is identified and managed appropriately to reduce future damage. Planning ensures individual mitigation projects and initiatives are coordinated and so that all local governments work together and no single action or project hinders the overall goal of creating a safer Cabarrus County. Additionally, planning plays an important part in generating community understanding of and support for hazard mitigation. The hazard mitigation planning process serves to publicize hazard information and create a forum for discussion of how best to balance the public interest and private property rights.
- **III. Mission.** Cabarrus County and the municipalities in the county have developed and implemented a hazard mitigation plan. This plan will help to reduce or eliminate the effects of natural or man-made hazards on the citizens of the county and their property.

A. Concept. Cabarrus County Government will maintain a basic hazard mitigation plan for all areas of the county. Local municipalities may opt to be included in the county plan or they may develop their own mitigation plan. Those municipalities that rely on the Cabarrus County Commerce Department for assistance will be included in the County Plan. The intent of the hazard mitigation plan is to develop, over time, a disaster resistant community.

B. Execution.

1. General.

- (a) Local mitigation strategies are a successful method to create safer, more hazard-resistant communities. Local governments control future development: where, when and how businesses, homes, farms and schools are built in Cabarrus County. These local governments must provide for the mitigation of natural hazards in their efforts. Regardless of the hazard, the economic and social impacts to the county could far exceed the costs of any mitigation planning and efforts.
- (b) Hazard mitigation reduces the loss of life and property from natural disasters and serves as an essential component in emergency management. After natural disasters, repairs and reconstruction are often completed in such a way as to simply restore damaged property to pre-disaster conditions. Replication of pre-disaster conditions results in a repetitive loss cycle of damage, reconstruction, and repeated damage. Hazard mitigation planning ensures that such cycles are broken, that post-disaster repairs and reconstruction take place after damages are analyzed, and that sounder, less vulnerable conditions are produced.
- (c) Based on the analysis of potential hazard impacts in Appendix A (see Table A-4), the natural hazards with the highest hazard index for Cabarrus County are severe winter storms, severe thunderstorms, and tornadoes. Hurricanes and flooding are rated as moderate, and earthquakes, wildfires, and landslides are rated as low hazard probability. Of all these natural hazards, flooding is the one hazard that Cabarrus County and local municipalities can take action that will have a significant impact on controlling the effects of this hazard on the citizens and their property.
- (d) Other sections of the hazard mitigation plan outline Cabarrus County's vulnerability to natural hazards and the capability of the County to respond to a natural disaster. With limited financial and staff resources to dedicate to hazard mitigation, it is essential that those hazards with the highest likelihood of occurrence and the greatest potential impact receive immediate attention.

2. Planning Goals

(a) The plan goals set county priorities for reducing susceptibility to natural hazards. The goals serve as the basis for development of the more specific plan objectives and hazard mitigation strategies. The North Carolina Division of Emergency Management has developed four broad goals for the communities of North Carolina to use in developing hazard mitigation plans. These are:

- Decrease the community's vulnerability to future hazard events.
- Increase the community's resiliency so that recovery can be quicker and less costly.
- Decrease the likelihood that a future natural hazard becomes a natural disaster.
- Ensure that future development contributes to the community's sustainability over time.
- (b) Cabarrus County has included several additional goals for hazard mitigation:
 - Increase or maintain Cabarrus County's internal capabilities to respond to hazards and improve the effectiveness of hazard mitigation efforts.
 - Enhance existing county policies that will reduce the potential damage from hazards without hindering managed growth and development within the county.
 - Protect public health, safety and welfare by increasing public awareness of existing hazards and encouraging both the public and private sectors to take actions to mitigate the risks from those hazards.
- (c) Mitigation goals can only be accomplished within the planning context of providing a sustainable environment that meets the needs of the current population of the county while protecting the needs of future generations. Sustainable development and smart growth principles of land stewardship, protection of the natural environment, and preservation of natural resources have all been considered during the development of mitigation strategies.
- (d) County ordinances are continually reviewed and revised to ensure our goals and objectives do not hinder hazard mitigation efforts. Cabarrus County Government has been active in floodplain management within the county. Cabarrus County is currently engaged in a stream mitigation project addressing restoration efforts across Rocky River basin. The county has developed a greenway program to encourage recreational development in possible flood hazard areas in place of residential or commercial use of those areas. The county water body overlay district requires a minimum fifty-foot buffer area to be placed along both sides of perennial and intermittent streams. The county enforces watershed protection areas that limit development in critical water supply areas. The County applies strict standards on the type of development that may occur within watershed protection areas.

3. Hazard Mitigation Strategies

- (a) Hazard mitigation includes three types of strategies:
 - (1) Structural mitigation constructing dam and levee projects to protect against flooding, constructing disaster-resistant structures, and retrofitting existing structures to withstand future hazardous events.

- (2) Non-structural mitigation development of land use plans, zoning ordinances, subdivision regulations, and tax incentives and disincentives to discourage development in high-hazard risk areas.
- (3) Educational programs educating the public about potential natural hazards, the importance of mitigation, and how to prepare for emergency situations.

4. Plan Objectives.

- (a) The mitigation objectives described in the text below and the mitigation strategies outlined in Table 1 cover aspects of all three types of mitigation strategies. These objectives and strategies have been developed as specific ways in which to reach the plan's stated goals.
 - (1) Implement a public awareness campaign to educate citizens of the possible hazards associated with locating in floodplains and measures that can be taken to lessen impacts of future floods.
 - (2) Participate in the Community Rating System (CRS) to help monitor hazard mitigation efforts and to improve the affordability of flood insurance for county citizens.
 - (3) Ensure that all emergency service agencies are adequately staffed, equipped, and funded to protect public health and safety.
 - (4) Encourage growth in areas suitable for development while discouraging growth in environmentally sensitive or flood hazard prone areas.
 - (5) Increase control over development in the floodplain to prevent increases in flood velocities and levels that endanger both people and property.
 - (6) Establish stricter building codes to ensure that structures are being built in a way that minimizes damage from natural hazards.
 - (7) Require increased elevation of new or substantially improved residential construction within floodplains and flood-proofing of new or substantially improved non-residential construction.

5. Description of Planning Process

(a) Cabarrus County initiated a coordinated hazard mitigation planning process in early 2002 in response to the approval of Senate Bill 300 mandating the development of a hazard mitigation plan for each county with in the state. The county had previously adopted a series of ordinances to regulate development within areas subject to natural hazards and included these concerns in the Small Area Plans then under development. The county government provides planning, zoning, emergency management and public safety support for the municipalities of Mt. Pleasant,

Harrisburg and Midland, so they elected to be included in the county hazard mitigation plan. The cities of Concord and Kannapolis opted to write their own plans, and are not included in the county plan.

(b) A team from the Emergency Management Department and the Commerce Department was formed to Review the existing plan and make appropriate revisions when necessary. Each member of the Plans Team reviewed their specific areas of responsibility and made changes as needed.

SUMMARY OF	PLAN UPDATES
SECTION	DESCRIPTION OF PLAN UPDATES
Executive Summary	 Revisions made to narrative text to incorporate updated information regarding the 2008 flooding.
Section I: Purpose	No revisions to this section.
Section II: Situation & Assumptions	Minor revisions to text of section.
Section III: Mission	Minor revisions to text of section.
	 Description of planning process enhanced and updated.
	A detailed summary of the update process was added; including a description of the process used, who served on the Plans Team, how the public was involved, summaries of meetings held and how the general public and external stakeholders were encouraged to participate.
	 A detailed review and update of each mitigation action listed including responsible parties, support parties and schedule.
Annex A: Hazard Identification and Analysis	 Minor revisions to text of section.
	 Modified the Fujita-Pearson Tornado Intensity Scale to the updated Enhanced Fujita Tornado Intensity Scale.
	 Updated Wildfire incident data.
	 Updated drought information narrative.

• Updated Table A-6 (Natural Hazards
Potential Impact Data for Cabarrus County)
 Updated Table A-7 (Hazard Index for Cabarrus County)
■ Updated Table A-8 (Floods)
 Updated Table A-9 (Tornado)
■ Updated Table A-10 (Snow/Ice Storms, Extreme Cold)
 Updated text concerning Hazardous Materials.
■ Updated Map A-1: Multi-Hazards: Previous Occurrences.
Minor revisions to text of this section.
 Updated Table B-1 (Value of Developed Facilities and Undeveloped Land in Cabarrus County)
 Updated Table B-2 (Critical Facilities in Cabarrus County)
 Updated Table B-3 (County Critical Facility Replacement Value)
 Updated text in Section III: Present Vulnerability.
 Updated Table B-4 (Building Permits for Cabarrus County Permitting Jurisdiction January 1993 – December 2009)
 Updated Table B-5 (National Flood Insurance Program Statistics for Cabarrus County)
 Updated Table B-6 (Cabarrus County Housing Unit Growth)
 Updated Table B-7 (Future Flood Vulnerability Current Residential Growth Patterns within County Permitting Jurisdiction)

Annex B: Vulnerability Assessment (Continued)	 Updated Map B-1: Cabarrus County Critical Facilities
	 Updated Map B-2: Cabarrus County Areas Vulnerable to Flooding
	 Updated Map B-3: Cabarrus County Critical Facilities with Flood Plain Overlay
Annex C: County Capability Assessment	 Minor revisions to text of this section.
	 Updated Demographic Overview to include modified population and economic factors.
	 Updated Map C-1: Cabarrus County Zoning Map with Flood Plain Information
Annex D: Evaluation of County Policies and	Minor revisions to text of this section.
Ordinances	 Replaced Table D-4 (Manufactured Homes
	& Trailers Ordinance) with sections of
	Manufactured Homes Overlay District due to repeal of the ordinance in June 2005.
Annex E: Municipal Mitigation Planning	 Minor revisions to text of this section to
	include information regarding City of Concord, City of Kannapolis and Town of Locust.
	 Updated Map E-1: Mt. Pleasant Areas Vulnerable to Flooding
	 Updated Map E-2: Harrisburg Areas Vulnerable to Flooding
	 Updated Map E-3: Midland Areas Vulnerable to Flooding
Appendix 1 Annex E	Minor revisions to text of this section.
	 Updated Community Profile.
	2
	 Updated Mitigation Strategies.
Appendix 2 Annex E	Minor revisions to text of this section.
	 Updated Community Profile.
	 Updated Mitigation Strategies.

Appendix 3 Annex E	 Minor revisions to text of this section.
	 Updated Community Profile.
	 Updated Mitigation Strategies.
Annex F: Evaluation and Monitoring of the Hazard Mitigation Plan	 Minor revisions to text of this section.
Trazard Wingarion Train	 Updated Community Profile.
	 Updated Mitigation Strategies.

- (c) The goal of the planning team was to ensure that the existing county procedures for mitigation met the FEMA criteria and that the county plan did not overlook any natural hazards in Mt. Pleasant, Harrisburg and Midland. Additionally, the planning process aided in developing community understanding and awareness of hazard mitigation efforts.
- (d) Hazard Mitigation Plans Team. The Hazard Mitigation Plans Team was formed in 2009 for planning and meets informally as required to work out details of the revised plan. The EM planner attended a NCEM sponsored planning workshop and the plans team has generally followed the procedures outlined in "Keeping Natural Hazards from Becoming Disasters A Mitigation Planning Guidebook for Local Governments" provided by the NC Division of Emergency Management. The points of contact from the communities acted as the principal advisor from that jurisdiction, as none of these towns possess a staff to handle the requirements of the planning process.

The Plans Team was led by the Emergency Management Department. David Hunter (Emergency Management) coordinated the update team including contacting the municipalities. Additionally, Mr. Hunter coordinated the public hearings. The Commerce Department updated actions, statistics and mapping. The municipalities reviewed and completed their respective sections. Each jurisdiction was responsible for reporting and updating their respective mitigation action plans. Each jurisdiction was responsible for addressing their most significant hazard concerns. This allows each jurisdiction to be responsible and accountable for those actions that apply to their jurisdiction. All jurisdictions participated in planning meetings as well as reviewed and commented on draft components of plan.

CABARRUS COUNTY PLANNING TEAM/POINTS OF CONTACT

NAME	ORGANIZATION	TEAM DESIGNATION
David P. Hunter	Emergency Management	Plans Team
Colleen Nelson	Commerce (Planning Section)	Plans Team
Mike Byrd	Commerce	Plans Team
Robbie Foxx	Commerce	Plans Team
Jeff Huss	Commerce	Plans Team
Josh Watkins	Town of Harrisburg	Plans Team
Vagn Hansen	Town of Mount Pleasant	Plans Team
David Pugh	Town of Midland	Plans Team
Robert S. Smith	Emergency Management Coordinator	Plans Team
Jonathan B. Marshall	Commerce Department Director	Plans Team
Michael K. Downs	Deputy County Manager	Plans Team
John Day	County Manager	POC
Troy Barnhardt	Mayor, Town of Mt Pleasant	POC
Timothy Hagler	Mayor, Town of Harrisburg	POC
Kathy Kitts	Mayor, Town of Midland	POC

(e) Public Input to the Planning Process

- (1) Initial public input came during the first planning phase. Public hearings were held for each jurisdiction participating in the plan during 2009. No public comments were received by participating jurisdictions. The draft plan was briefed to the public at the county commissioner's meeting. This was followed by briefings to the Harrisburg town council; the Mt. Pleasant town council; and the Midland town council. The elected board comments were considered in future plan development.
- (2) First Series of Public Meetings. After the county plan was reviewed by NCEM, the Hazard Mitigation Plans Team went back to the municipalities to obtain any further input or comments. These meetings were advertised in local newspapers and included a point of contact telephone number for those that could not attend the meetings. The adopted draft hazard mitigation plan has been linked to the County Emergency Management website.
- (3) The plans team contacted the municipalities again. Representatives from the team met with the Midland town council; the Harrisburg Planning and Zoning Committee; the County Planning and Zoning Committee; and the Mount Pleasant town council. At these meetings, the planners presented an overview of the planning, and the continuing need for public input. At each meeting, the planners answered questions on the draft plan and the schedule for the revised plan.
- (4) Second Series of Public Meetings. A second series of public meetings/hearings was conducted once the revised plan had been approved by NCEM and was ready for adoption by the Cabarrus County Board of Commissioners, and the town councils of Mt. Pleasant, Harrisburg and Midland. The public was invited to participate in the process, with particular emphasis

placed on neighboring communities, agencies, businesses, academia, non-profit agencies and other interested groups. This process was repeated for the plan revision beginning in November 2009. A public hearing was held November 30, 2009 to solicit input pertaining to natural hazards within Cabarrus County. Additional opportunities for public input were provided through local television broadcasts, electronic media and print media outlets. The external stakeholders participated in this process through direct mail and electronic mail correspondence.

6. Hazard Mitigation Strategies

- (a) This section addresses specific ways Cabarrus County and its municipalities can act to lessen and, hopefully, eventually eliminate prevent future loss from the most common hazards in Cabarrus County. The Plan Team has reviewed the following plans and documents and found no conflicts with the Hazard Mitigation Plan: Zoning Regulations, Subdivision Regulations, Flood Damage Prevention Ordinances, Land Use Plans, State & Local Building Codes.
- (b) A detailed examination and analysis of the hazards that could threaten Cabarrus County is located at Annex A. The principal natural hazards that affect the county are severe thunderstorms/ tornadoes, severe winter weather, and flooding. The remaining hazards are of a localized nature, infrequent occurrence, or unlikely to occur this area. Strategies are continually reviewed on an annual basis to identify necessary changes, actions or reprioritization. All changes are noted in tables which follow in this section.
- (c) Prioritization. The priority for the strategy implementation is based on the overall importance of the strategy to the county and the municipalities and the fiscal and technical ability to execute the strategies. This evaluation included a cost-benefit review; a review of county and municipal capabilities; and the assessment of hazards and vulnerabilities. Cabarrus County will utilize the FEMA Mitigation Benefit-Cost Analysis Toolkit which includes all FEMA software, technical guides, and tools to conduct a Benefit-Cost Analysis (BCA). The information contained applies to and is valid for all FEMA Hazard Mitigation Assistance grant programs. The Plans Team took the cost of any proposed reduction measure and the monetary value of the expected related direct and indirect benefits into account and determining if a project is economically justified. Estimation of benefits can be complicated with the actual level of benefits realized dependent upon the degree of events occurring over the life of the project. The team used probability based approaches in terms of estimating a more rigorous analysis of benefits. Cost effectiveness analysis was applied to determine the selection of projects. Evaluation of injury and loss of human life; both of which are examples of tangibles were also analyzed. Our projects were ranked based upon these evaluations coupled with our current economic challenges. A majority of our projects will require only staff cost to complete thus giving us a larger beneficial margin for the cost.
- (d) High Wind Mitigation Strategies. There are a number of natural hazards that have the potential to include high wind damage thunderstorms, tornadoes, severe winter

storms, and hurricanes. In 1997, the Federal Emergency Management Agency instituted a new program to help communities and property owners deal with the impact of tornadoes and other high-wind natural hazards. The program, Project Impact, was begun in response to rapidly escalating disaster costs and the growing need to assist communities in protecting lives and property. Several of the Project Impact recommendations to help reduce the devastating effects of high winds are included in Table A-1. It should be noted that any of these recommendations that go beyond the construction requirements of the North Carolina Building Code may require approval by the North Carolina Building Code Council before they can be legally enforced.

Table 1: High Wind Mitigation Strategies

Short Range (1 – 2 year) Strategies	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Projected Cost/Funding Sources
Maintain current Early Warning System/Dissemination of information alerting county residents when to seek shelter when high winds expected.	Emergency Management Department	Sheriff's Department	Medium	Continuous	A Connect-CTY Program has been purchased and implemented for the entire county to help with early warning/notification. County still relies on the state and federal notification system for widespread emergency situations.	Maintenance costs for system estimated at \$5,000.00 and included in local government funding.
Adopt and enforce latest model building codes and national wind engineering standards.	Commerce /Building Inspections	Emergency Management Department	Medium	When adopted in the State Building Code	The scheduled dates have been removed due to a continuous process as the state building codes are updated once every 3 years.	Local staff time.
Ensure that manufactured homes are installed and secured properly.	Commerce /Building Inspections		High	Continuous		Local staff time.
Require residential construction to meet latest wind-resistance standards; encourage replacement of doublewide garage doors to improve wind resistance.	Commerce /Building Inspections		Medium	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.
Ensure doorframes are securely anchored; especially double doors that can be very dangerous in high winds if not securely fastened.	Commerce /Building Inspections		Medium	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.

Short Range (1 – 2 year) Strategies	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Projected Cost/Funding Sources
Make sure that architectural features are designed, manufactured and installed to limit the creation of wind-borne debris.	Commerce /Building Inspections		Medium	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.

(e) Severe Winter Storms. Because of the infrequent occurrence of such storms, Cabarrus County and its municipalities are not completely equipped to handle the demands on public services caused by such events. The county does not provide road clearance in any portion of the county, as this is done by the NC Department of Transportation and the local municipalities. The priority is to clear the main highways and those areas needed for public safety. Municipalities clear streets within their town limits.

Table 2: Winter Storm Mitigation Strategies

Short Range (1 – 2 year)	Responsible	Support	Priority	Schedule	Narrative	Project Cost/Funding
Strategies	Parties	Parties				Sources
Maintain current Early	Emergency	Sheriff's	Medium	Continuous	A Connect-CTY Program has	Maintenance costs for
Warning System/Dissemination of information alerting county residents when winter storms are expected.	Management Department	Department			been purchased and implemented for the entire county to help with early warning/notification. County still relies on the state and federal notification system for widespread emergency situations.	system estimated at \$5,000.00 and included in local government funding.
Increase public awareness of the effects of winter weather on structures, power lines, trees and how to prepare for this hazard.	Emergency Management Department	Local Red Cross chapter	Low	Continuous		Local staff time. No cost to utilize county website, county cable channel.

Short Range (1 – 2 year) Strategies	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
Strategies	1 at ties	1 at ties				Sources
Review county building codes to determine if current standards will reduce hazards from winter storms	Commerce Department	Emergency Management Department	Medium	When changes are made to the State Building Code	The scheduled dates have been removed due to a continuous process as the state building codes are updated once every 3 years.	Local staff time.
Evaluate access problems caused by snow or ice for critical facilities; develop recommendations for clearing critical sites, e.g., law enforcement, EMS, and fire service facilities, and command centers. Identify alternate command posts.	Emergency Management Department Municipal- ities	County General Services	High	Annually		Local staff time.
Review plan for debris removal and disposal	General Services Department	Emergency Management Department	High	Annually	Change in department responsibility.	\$10,000.00; EMPG and local funds.
Review inclement weather plan for county transportation system	Transportatio n Department	Emergency Management Department	High	Annually		Local staff time.

(f) Flood Mitigation Strategies

- (1) Flooding is a possible hazard resulting from severe thunderstorms/tornadoes and from the melting of accumulation from severe winter storms. This section addresses specific ways Cabarrus County and its municipalities can act to lessen and eventually eliminate repetitive flood losses and prevent future loss from inappropriate new development
- (2) The Community Rating System has three major goals: to reduce flood losses, to facilitate accurate insurance ratings, and to promote awareness of flood insurance. Communities that regulate development in floodplains are able to join the

National Flood Insurance Program (NFIP). In return, the NFIP provides federally backed flood insurance for properties in the community. Cabarrus County already participates in the NFIP; however, the CRS provides opportunities to reduce flood insurance premiums if the County goes above and beyond the NFIP's minimum standards for floodplain regulation. The objective of the CRS is to reward communities for what they are doing, as well as to provide an incentive for new flood protection strategies. The reduction in the insurance premiums is in the form of a CRS classification. There are 10 classes, each providing an additional 5% premium rate reduction for properties in the mapped floodplain. A community's class is based on the number of credit points it receives for floodplain management strategies. A community that does not apply for the CRS is a Class 10 community.

(3) There are four mitigation categories (Series 300, 400, 500 and 600) with a total of eighteen creditable floodplain management strategies. Participation in the program will reward the citizens of Cabarrus County with lower insurance premium rates. Cabarrus County, Town of Harrisburg, Town of Midland and Town of Mt. Pleasant all continue to participate in this program with annual reviews performed by Insurance Services Office (ISO).

Table 3: Flood Mitigation Strategies

Note: Abbreviations used in Table 1: Federal Emergency Management Agency (FEMA); North Carolina Department of Environment and Natural Resources (NCDENR); North Carolina Division of Emergency Management (NCDEM); Natural Resource Conservation Services (NRCS)

Short Range (1 – 2 year) Strategies	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
(CRS Activity Code)						
I. Review/Update Flood	Commerce	Commerce	High	As	This is a continuous mitigation	Local staff time.
Damage Prevention Ordinance to ensure	Department	Department		Necessary	activity therefore a specific schedule has been removed.	
maximum protection from	Board of	Commerce				
flood hazard events (CRS	Commissioner	Department				
430).	S	/Building Inspections				
	Municipalities	-				

Short Range (1 – 2 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
A. All new, remodeled, or repairs to substantially damaged buildings should be elevated to the base flood elevation (BFE) to a minimum of 2 feet above BFE. (CRS 430). Consider prohibiting construction or substantial improvement of buildings within the 100-year floodplain.	Board of Commissioner s Municipalities	Commerce Department/ Building Inspections	Medium	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.
B. Review any rebuilding strategies in wake of local emergencies and consider policies/procedures for minimizing repetitive losses.	Board of Commissioner s Municipalities	Commerce Department /Building Inspections	Low	As Needed	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.
C. Prohibit enclosures to the lower areas of elevated buildings, including breakaway walls. (CRS 430).	Commerce Department /Building Inspections	Commerce Department Board of Commission- ers Municipal- ities	High	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.

Short Range (1 – 2 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
D. Continue to require and maintain FEMA elevation certificates for all permits for new buildings or improvements to buildings on lots, including any portion of 100-year floodplain (CRS 310)	Commerce Department /Building Inspections		High	Continuous		Local staff time.
E. Advise/assist property owners in retrofitting their businesses and homes. Retrofitting means modifying an existing building or yard to protect the property from flood damage.	Commerce Department /Building Inspections	Commerce Department	Medium	Continuous		Local staff time.
II. Revise/update regulatory floodplain maps (CRS 410).	FEMA NCDENR NCDEM	Commerce Department	Medium	Completed 2008-2009; Future revisions as needed	Mitigation activity completed in 2008-2009. Future revisions will be performed as needed.	Local staff time.
III. Continue participation in the Community Rating System	Commerce Department		Medium	Continuous		Local staff time.

Short Range (1 – 2 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
IV. Review countywide zoning plan or, at a minimum, adopt zoning in floodplain areas to better control future development in these areas.	Board of Commission- ers Municipalities	Commerce Department	High	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.
VI. Update Small Area Plans						
A. Delineate preferred growth areas and develop area plans for target locations.	Board of Commission- ers Municipalities	Commerce Department	High	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.
B. Develop an open space plan; target properties for acquisition.	Board of Commission- ers Municipalities	Commerce Department/ Soil & Water Division	Medium	When funds are available	Program has been developed and this is an ongoing activity.	Cost undetermined at this time. Local funds when available.
C. Maintain policies that discourage growth in flood hazard areas.	Board of Commission- ers Municipalities	Commerce Department	Medium	Continuous	Policies have been adopted. This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.

Short Range (1 – 2 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
D. Work through Water and Sewer Authority of Cabarrus County (WSACC) to ensure the public is fully informed of and the building permit process incorporates restrictions on providing service within the 100-year floodplain.	Commerce Department/ Planning Division WASCC	Commerce Department /Building Inspections	Medium	Continuous	Reflects modification of department name.	Local staff time.
VII. Set up centralized, coordinated permitting process, including effective filing/permitting system to ensure compliance with floodplain regulations. Count building improvements cumulatively (maintain permit history so when cumulative improvements equal 50% of building value, (substantial improvement) building must be brought up to flood protection standards for new construction). Goal to eventually have all flood hazard	Information Technology Systems Department	Commerce Department /Building Inspections Cabarrus Health Alliance/ Environment al Health	High	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.

Short Range (1 – 2 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
endangered buildings brought up to flood protection standards (CRS 430).						
VIII. Review Capital Improvement Plan to ensure no public facilities proposed for flood hazard areas; amend as necessary. Protect new critical facilities (e.g., schools, hospitals, fire stations, emergency shelters) to 2' above the 100-year flood elevation (5' above BFE) (CRS 430).	Board of Commission- ers Municipal Governments County Board of Education	Commerce Department	Medium	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed. Other modifications reflect department name changes.	Local staff time.
IX. Maintain library on retrofitting techniques/publicize through bulletins/newsletters (CRS 330 / 350 /360).	Commerce Department /Building Inspections	FEMA, Corps of Engineers,	Low	Continuous	Modified to reflect responsible parties.	Local staff time.
X. Drainage Systems Maintenance (CRS 540)						

Short Range (1 – 2 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
A. Establish coordinating committee to ensure that responsible parties communicate to ensure maximum cooperation in developing and maintaining the county's drainage systems.	Municipal Engineering Departments Drainage Districts NRCS Environmental Health.		Low	2015	Concord, Kannapolis and Harrisburg have established storm water utilities managed by their engineering departments. Coordination is informal, change date reflects estimate of when formal committee could be established.	Local staff time.
B. Establish/maintain coordinated inspection program.	Municipal public works		Medium	Continuous	This is a continuous mitigation activity.	Local staff time.
C. Debris removal program/problem site corrections.	Municipal public works		Medium	As Needed	This is a continuous mitigation activity.	Local staff time.
D. Prepare countywide storm water management plan covering river basins.	NCDENR NRCS		Low	2015	Responsibilities are state agencies, change date due to funding priorities.	Local staff time.
XI. Early Warning System.						
A. Ensure adequate evacuation time in case of major hazard event	Emergency Management Department Municipalities	Sheriff's Department	Medium	Continuous		Local staff time.

Short Range (1 – 2 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
B. Evaluate areas with limited evacuation capacity and develop methods for improving evacuation routes and methods.	Emergency Management Department Municipalities	NCDOT	Medium	Continuous		Local staff time.

Mid Range (3 – 5 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
XIII. Acquisition of	Commerce	NCDENR	Low	Continuous		Cost estimated at \$1.8
properties susceptible to flood damage (voluntary program) (CRS 420/510).	Department Charitable donation by property owners	Private non- profit organizations e.g., Land Conservancy	Low	Continuous		million dollars. Hazard Mitigation Grant Program, local funding and private funding.
A. Identify properties for	Parks Commerce	FEMA	Low	Continuous		Local staff time.
public acquisition.	Department	NCDENR	Low	Continuous		Local staff time.
B. Establish list of priority properties for acquisition in the event of another natural disaster.	Commerce Department	FEMA NCDENR	Low	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed.	Local staff time.

Mid Range (3 – 5 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
C. Amend Recreation Plan to provide for integration of publicly acquired land into park or greenway system so hazardous areas remain undeveloped in perpetuity (much more effective than removing structures from isolated parcels).	Commerce Department	FEMA NCDENR NC Parks and Recreation	Medium	Continuous	This is a continuous mitigation activity therefore a specific schedule has been removed. Commissioners adopted fifteen county integrated open space plan.	Local staff time.
D. Review and update County Hazard Mitigation Plan	Commerce Department Emergency Management Department Board of Commission- ers and Municipalities	FEMA NCDENR	Medium	2015	Ongoing and next update process.	Local staff time. \$10,000.00 local funds for next update.
XIV. Capital Improvements Program.	Board of Commission- ers Municipalities	Department Management		Continuous		

Mid Range (3 – 5 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
A. Develop plan for relocating public infrastructure out of flood hazard areas.	Emergency Management Department General Services	Department Management	Low	2015, if needed	Currently no need for relocation.	Local staff time.
B. Evaluate safety and security of critical services (public and private) and facilities – roads, bridges, water, sewer, electricity, etc. – and critical facilities - fire, rescue, medical, etc.	Municipalities Board of Commissioners Municipalities Emergency Management Department	WSACC Power & Gas Companies Carolinas Medical Center- Northeast NCDOT	High	Continuous	This has been developed and is a continuous mitigation activity. Name change of healthcare facility. Priority change to recognize critical aspect of these facilities.	Local staff time.
C. Evaluate flood or access problems for critical facilities; develop recommendations for protecting critical sites, e.g., law enforcement, EMS and fire service facilities, and command centers. Identify alternate command posts.	Emergency Management Department Municipalities	Sheriff's Department EMS	High	Continuous		Local staff time.

Mid Range (3 – 5 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
XV. Maintain hazard awareness program (elevation certificates, FIRM data, bulletin on property protection measures and flood insurance, etc.) (CRS 310 / 320 / 330 / 340 / 440).	Commerce Department Communica- tion and Outreach	Banks Real estate Agents Insurance Agents Chamber of Commerce	Medium	Continuous	Reflects modification of department names.	Local staff time.
A. Establish a Flood Awareness Week to publicize hazard and protection measures (CRS 610).	Communication and Outreach Commerce Department	Board of Commission- ers Municipal- ities Local Media Outlets	Low	2015	No progress due to budgetary and staffing issues. Reflects modification of department name.	\$5,000.00 local funds.
B. Request that the real estate Multiple Listing Service (MLS) be amended to include notice of flood hazard and the requirement to purchase flood insurance	Board of Commission- ers Municipalities Commerce Department	Real estate agents	High			Local staff time.

Mid Range (3 – 5 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
C. Establish locations for flood awareness signs. Show elevations of high water in areas that flood; the base flood and the base flood plus two feet. Signs should be surveyed to serve as elevation reference marks.	Commerce Department Municipalities	Emergency Management Department FEMA NCDENR NCDOT	Low	2015	Low priority. Most citizens are acutely aware of high flood areas in the county. Reflects modification of department name.	\$3,000.00 local funds.
D. Continue development of Hazard Warning and Response procedures – warning and evacuation of critical facilities, getting persons out of flood prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials. (CRS 610).	Emergency Management Department Municipalities	Sheriff's Department	High	Continuous	Follow current EOP and SOG that have been updated as well as facility response that are in a flood plain.	Local staff time.
XVI. Plan Implementation.	Commerce Department	Emergency Management Department		Continuous		
A. Monitor Plan to ensure schedules met.	Commerce Department	Emergency Management Department	Medium	Continuous		Local staff time.

Mid Range (3 – 5 year) Strategies (CRS Activity Code)	Responsible Parties	Support Parties	Priority	Schedule	Narrative	Project Cost/Funding Sources
B. Develop tracking system to evaluate progress and revise mitigation strategies as necessary.	Commerce Department	Emergency Management Department	Medium	Continuous		Local staff time.
C. Track benefits in flood loss reduction.	Commerce Department	Emergency Management Department	Medium	Continuous		Local staff time.
XVIII. Produce annual progress report on how plan is being implemented – send with annual CRS re-certification.	Commerce Department	Emergency Management Department	Low	Annually		Local staff time.

7. Review, Evaluation and Monitoring of the Hazard Mitigation Plan

(a) As a minimum, county agencies and the municipalities included in this plan will review and revise the Hazard Mitigation Plan every five years. The revised plan will be submitted to the NCEM Hazard Mitigation Officer for review. This evaluation and revision of the plan will help ensure that local mitigation efforts include the latest and most effective mitigation techniques. Periodic revisions may also be necessary to keep the Cabarrus County plan in compliance with federal and state statutes and regulations. Additional development, implementation of mitigation efforts, development of new mitigation processes, and changes in federal and state statutes and regulations may all affect the local hazard mitigation plan.

(b) Criteria for Review of the Hazard Mitigation Plan

- Do the goals and objectives still address current and expected conditions?
- Has the nature or magnitude of the risks changed?
- Are the current resources appropriate for implementing the plan?
- Are there any problems in implementing the plan? (technical, legal, political, coordination with other agencies)
- Have the results occurred as expected?
- Did all agencies and municipalities participate as proposed?

A form to assist in the evaluation and monitoring of this plan is located at Annex F.

- (c) Monitoring Plan Implementation. The Cabarrus County Commerce Department, the Emergency Management Department and the towns of Mount Pleasant, Harrisburg and Midland will monitor the implementation of the plan. Both departments and the municipalities will ensure that the features of the plan are included in all planning and in current operations. This includes planning and zoning decisions and emergency preparedness and response planning for the county and three municipalities. Both county departments and the municipalities will provide a yearly overview report using the Evaluation and Monitoring Form. This report will be due each year on the anniversary of the final plan adoption date and will provide information on the progress made with the plan. This data will be incorporated into the review and evaluation of the plan conducted at the five-year point.
- (d) Evaluating the Plan. The evaluation of the impact of the plan will occur simultaneously with the five year review. This will help Cabarrus County and the towns of Mount Pleasant, Harrisburg and Midland determine how effective the plan is in mitigating local hazards. The Cabarrus County Commerce Department, Emergency Management Department and the municipalities will employ the review criteria listed above and the Evaluation and Monitoring Form to develop data for the review. The results of the yearly plan monitoring will also be used in the evaluation. A report of the review and evaluation will be prepared and provided to the County Board of Commissioners and the three town councils with recommendations on further actions.

(e) In the context of a Federal disaster declaration, state and local governments are allowed to update or expand an existing plan to reflect circumstances arising out of the disaster. An updated plan in this circumstance might include a re-evaluation of the hazards and the jurisdiction's exposure to them, a re-assessment of existing mitigation capabilities, and new or additional mitigation recommendations.

(f) Initiation of Amendments

- (1) Any person or organization, including the Commerce Department and the Emergency Management Department, may petition the Board of Commissioners to amend the Hazard Mitigation Plan. The petition shall be filed with the Commerce Department and shall include a description of the proposed text or map amendment, along with an explanation of the changing circumstances that necessitate consideration of the amendment.
- (2) Upon initiation of a text or map amendment, the Commerce Department shall forward the proposed amendment to all interested parties, including, but not limited to, all affected County departments, and other interested agencies such as the North Carolina Division of Emergency Management, the United States Army Corps of Engineers, and the Natural Resource Conservation Service for a 30-day review and comment period. At the end of the comment period, the proposed amendment shall be forwarded along with all review comments to the Planning Board for its consideration. If no comments are received from the reviewing department or agency within the specified review period, such shall be noted in the Commerce Department's recommendation to the Planning Board.
- (g) Planning Board Review and Recommendation. The Board of Commissioners shall review the proposed amendment, along with the Commerce Department's recommendation and any comments received from other departments and agencies. The Planning and Zoning Commission shall submit its recommendation on the proposed amendment to the Board of Commissioners within forty-five (45) days. Failure of the Planning and Zoning Commission to submit its recommendation within this time period shall constitute a favorable recommendation.

(h) Public Hearing Requirements

- (1) No amendment to the Hazard Mitigation Plan may be adopted until a public hearing has been held. Upon receipt of a recommendation from the Planning Board, the Commerce Department shall, after consultation with the Clerk to the Board, schedule a public hearing before the Board of Commissioners on the petition.
- (2) The public notice shall be published two (2) times in a newspaper having general circulation within the County. The first notice will be no more than 25 days before the hearing; the second notice no less than 10 days prior to the scheduled public hearing date. In computing this period,

the date of publication shall not be counted but the date of the public hearing shall be. With respect to map amendments, the Commerce Department shall provide first-class mail notice of the public hearing to:

- Owners, according to county tax records, of all properties whose use of land may be affected by the proposed amendment.
- Owners, according to tax records, of all properties within 100 feet of the properties affected by the proposed amendment.
- (3) The Commerce Department may also post notices of the public hearing in the vicinity of the properties affected by the proposed amendment and take any other action deemed by the Commerce Department to be useful or appropriate to give notice of the public hearing. The notice required or authorized by this section shall:
 - State the date, time, and place of the public hearing.
 - Summarize the nature and character of the proposed change.
 - If the proposed amendment involves a change in potential use of the land, reasonably identify the property whose potential land use would be affected by the amendment.
 - State that the full text of the amendment can be obtained from the Cabarrus County Commerce Department.
 State that substantial changes in the proposed amendment may be made following the public hearing.
 - Board of Commissioners Review and Adoption Upon receipt of a recommendation from the Planning and Zoning Commission, the Commerce Department shall schedule a public hearing before the Board of Commissioners on the petition according to the procedure outlined in Section "Public Hearing Requirements".
- (i) Integration of New Policies and Ordinances.
 - (1) The development of a hazard mitigation plan entails reviewing and updating existing land use policies and regulatory ordinances while considering new policies and ordinances that improve and extend protection of the public health, safety, and welfare. The hazard mitigation planning process provides the opportunity to ensure that all planning efforts work cohesively in order to achieve mitigation goals for existing and future development. Integration into the existing regulatory framework will ensure that the county Hazard Mitigation Plan will be utilized to its full potential.
 - (2) The county Commerce Department will create a process by which the requirements of this hazard mitigation plan will be incorporated into other local plans. During the planning process for new and updated local planning documents, such as a comprehensive plan, small area plan, or a capital improvements plan, to name a few examples, the local planner will provide a copy of the hazard mitigation plan to each respective advisory committee member. The local planner will remind the advisory committee members that all goals and strategies of new and updated local planning documents must be

consistent with the hazard mitigation plan and will not contribute to increased hazards in the jurisdiction.

- (3) The public was involved in a number of areas: debriefing of major events; public hearings were held as supporting ordinances and regulations were amended and the Water Shed Improvement Commission accepts public comments related to flooding and storm water issues. In addition, the Board of Commissioners allow for general public comment at each of their monthly meetings. The strategies will be continued and evaluated to ensure public input.
- (j) Public Education. The leaders of Cabarrus County know that education plays a vital role in both the development and implementation of the hazard mitigation plan. The plan can be used to encourage and promote public awareness and participation in mitigation efforts. Mitigation planning can be used to as an educational tool to convey to Cabarrus County citizens the danger of natural hazards and to outline strategies for reducing or eliminating potential damage to lives and property within the county.
- 8. Supplemental Information. The attached annexes to the plan contain additional information to supplement the details of the Hazard Mitigation Plan. The annexes to the plan cover hazard identification and analysis; an assessment of the County's vulnerability to natural hazards; an assessment of the County's capability to address natural hazards; and an evaluation of current County policies and ordinances that influence hazard mitigation planning.

The annexes are as follows:

Annex A: Hazard Identification and Analysis

Annex B: Vulnerability Assessment

Annex C: County Capability Assessment

Annex D: Evaluation of County Policies and Ordinances

Annex E: Municipal Mitigation Planning

Annex F: Evaluation and Monitoring of the Hazard Mitigation Plan